

What is claimed is:

1. A block construction system comprising:

a first block having a top face, said top face formed with at least one raised, substantially flat horizontal portion positioned between a pair of longitudinally aligned edges, with each said edge being rounded, said top face further formed with a pair of substantially flat horizontal stop surfaces with each said rounded edge positioned between said flat portion and a respective stop surface; and

10 a second block having a bottom face, said bottom face formed with a pair of stop surfaces and at least one substantially flat portion recessed from said stop surfaces and positioned between a pair of curved surfaces that are shaped to substantially conform to said edges on said top face, said recessed portion for engaging said raised portion when said second block is stacked on said first block and said bottom face stop surfaces for engaging said top face stop surfaces to vertically align said first block with said second block.

15 2. A system as recited in claim 1 wherein said top face has a width, w, transverse to said longitudinally aligned edges, said rounded edges have a radius of curvature, r, with said radius of curvature being greater than approximately one twelfth of said block width ( $r > w /12$ ).

20 3. A system as recited in claim 2 wherein said radius of curvature, r, is approximately one-half inches ( $r \approx 0.5$  in.).

25 4. A system as recited in claim 1 wherein said first block extends from a first side to a second side and wherein each said side is formed with a notch immediately below each said top face stop surface, each said notch for creating a longitudinally aligned channel with a said bottom face stop surface to simulate a mortar joint between said first and second blocks.

5. A system as recited in claim 1 wherein each said block is formed with a first end face and a second end face with said first end face formed with a vertically aligned tongue having a tongue surface with a radius of curvature, R, said tongue surface extending along said radius of curvature, R,
  - 5 approximately one-hundred eighty degrees, and said second end formed with a vertically aligned groove having a groove surface substantially conformal with said tongue surface to receive a said tongue from an adjacent block in a common course.
6. A system as recited in claim 5 wherein said top face has a width, w, transverse to said longitudinally aligned edges and said radius of curvature of said tongue surface, R is greater than approximately one fourth the width of said block ( $r > w/4$ ).
  - 10 7. A system as recited in claim 6 wherein said radius of curvature of said tongue surface, R, is approximately one and one-half inches ( $r \approx 1.5$  in.).
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8. A block construction system comprising:  
a first block having an end face formed with a vertically aligned tongue having a tongue surface with a radius of curvature, R, wherein said tongue surface extends along said radius of curvature, R, approximately one-hundred eighty degrees, said end face extending horizontally between a first side of said block and a second side of said block with said tongue positioned approximately midway between said sides on said end face; and  
a second block having an end face formed with a vertically aligned groove having a groove surface substantially conformal with said tongue surface, said groove for receiving said tongue of said first block when said first and second blocks are positioned adjacent in a common course to align said first and second blocks and establish a hinge joint between said first and second blocks to accommodate minor vibration of said blocks during the service life of said system.

9. A system as recited in claim 8 wherein said end face of said first block has a width, w, transverse to said vertically aligned tongue and said radius of curvature of said tongue surface, R is greater than approximately one fourth the width of said block ( $r > w/4$ ).

10. A system as recited in claim 8 wherein said radius of curvature of said tongue surface, R, is approximately one and one-half inches ( $r \approx 1.5$  in.).

11. A system as recited in claim 8 wherein said first block has a top face, said top face formed with a raised, substantially flat horizontal portion that extends between a pair of longitudinally aligned edges with each said edge being rounded, said top face further formed with a pair of substantially flat horizontal stop surfaces with each said rounded edge extending between said flat portion and a respective stop surface, and wherein said system further comprises a third block having a bottom face, said bottom face formed with a pair of stop surfaces and a substantially flat portion recessed from said stop surfaces, said recessed portion for engaging said raised portion of said first block when said third block is stacked on said first block to vertically align said third block with said first block.

12. A system as recited in claim 11 wherein said top face has a width,  $w$ , transverse to said longitudinally aligned edges, said rounded edges have a radius of curvature,  $r$ , with said radius of curvature being greater than approximately one twelfth of said block width ( $r > w / 12$ ).

13. A system as recited in claim 12 wherein said radius of curvature,  $r$ , is approximately one-half inches ( $r \approx 0.5$  in.).

14. A system as recited in claim 11 wherein said first block extends from a first side to a second side and wherein each said side is formed with a notch immediately below each said top face stop surface, each said notch for creating a longitudinally aligned channel with a said bottom face stop surface to simulate a mortar joint between said first and third blocks.

15. A block construction system comprising:

5        a plurality of blocks, each block having a top face and an opposed bottom face, said top face formed with a raised, substantially flat horizontal portion that extends between a pair of longitudinally aligned edges with each said edge being rounded, said top face further formed with a pair of substantially flat horizontal stop surfaces with each said rounded edge extending between said flat portion and a respective stop surface, said bottom face formed with a pair of stop surfaces and a substantially flat portion recessed from said stop surfaces that extends between a pair of curved surfaces that are shaped to substantially conform to said edges on said top face, said recessed portion for engaging said raised portion of a said block stacked thereon and said bottom face stop surfaces for engaging top face stop surfaces of a said block stacked thereon to vertically align

10      each block with blocks stacked thereon and prevent water from penetrating said joint to said flat portion.

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